DATA DESCRIPTION FOR FILE <Meteor60.csv>

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SCOPE
Hydrographical and chemical data made during the German Meteor 60/5 cruise in the mid-latitude North Atlantic in March/April 2004.

DATA DESCRIPTION
The methods, corrections and post-cruise calibration procedures are described below.

TOTAL ALKALINITY
Potentiometric titration [Mintrop et al., 2000].
CRM corrected from 4 separate batches (batch # 58, 60, 63 and 64). The mean difference between measurements and the Certified values was -1.19 ± 0.69 μmol kg^{-1} (95% confidence interval, n=69). Alkalinity values have been adjusted to the certified value by addition of this mean offset. Precision of the total alkalinity single measurement was 4.28 μmol kg^{-1} (95% confidence interval), determined from measurements of duplicate samples.
The total alkalinity is corrected by adding 1.6 umol/kg from the original data based on cross over with contemporary CLIVAR cruises.
The background and procedures of the correction is described in detail by Tanhua and Wallace (2005).

DISSOLVED INORGANIC CARBON (DIC)
Coulometric titration [Johnson et al., 1993].
CRM corrected from 4 separate batches (batch # 58, 60, 63 and 64). Mean offset between our measurements and the Certified Values was 1.02 ± 0.44 μmol kg^{-1} (95% confidence interval, n = 88). Measured DIC concentrations were therefore adjusted to the manometric Certified calibration scale by subtraction of this mean offset. Precision of the measurements was 1.49 μmol kg^{-1} (95% confidence interval), as determined from analyses of duplicate samples.
The background and procedures of the correction is described in detail by Tanhua and Wallace [2005].

NUTRIENTS
The nutrient data was compared with crossover stations for contemporary CLIVAR lines (A16, A22 and A20).

M60 Silicate values too low in the high concentration range compared to CLIVAR data, therefore the following corrections were made;
For Si<20 μmol/kg; Si(corr)=Si
For 20<Si<30 μmol/kg; Si(corr)=Si+(Si-20)*0.2
For Si>30 μmol/kg; Si(corr)=Si+2

M60 nitrate values are low in the high concentration range, therefore the following corrections were made;
NO3<10 μmol/kg; NO3(corr)=NO3
NO3>10 μmol/kg; NO3(corr)=NO3+(NO3-10)*0.05

The PO4 data from M60/5 was subject to some analytical difficulties and were of noticeably poorer quality than the other parameters.

CFCs
The CFC measurements performed during M60/5 were made on an analytical system similar to that described by Bullister and Weiss and are reported on the SIO98 scale. The analytical precision was determined to be 0.7 and 0.6 % for CFC-12, CFC-11, respectively, as calculated from duplicate samples, typically at two depths per station.
We determined a sampling blank of 0.007, 0.010 and 0.045 pmol/kg for CFC-12, CFC-11 and CCl4, respectively, determined as the median value of 18 deep water samples in the eastern basin. The data has been corrected for this sampling blank.

DATA FORMAT
The data are supplied in comma separated format (.csv).

The header records;
Station#, Depth (m), Date (yyyy,mm,dd), Lat (°N), Lon (°E), Temperature, Salinity, CFC-12 (pmol/kg), CFC-11 (pmol/kg), CCl4 (pmol/kg), Oxygen (umol/kg), SiO4 (umol/kg), PO4 (umol/kg), NO3 (umol/kg), NO2 (umol/kg), DIC-calc (umol/kg), Total Alkalinity (umol/kg).

Missing data are denoted with –999.9, the units for the revised data are identical with the original data.

REFERENCES

Bullister, J.L. and Weiss, R.F., 1988. Determination of CCl3F and CCl2F2 in seawater and air. Deep-Sea Research, 35(5): 839-853.

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